



Technical Proposal

Warwick Sewers- Bayside- Mill Cove Site, Tidewater Drive

Warwick, Rhode Island

Machine-Assisted Feature Identification

Submitted to:

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**Warwick Sewer Authority
Environmental Protection Agency
Rhode Island Historical Preservation and Heritage Commission
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Narragansett Indian Tribe**

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Introduction

The Warwick Sewer Authority (WSA) is planning and coordinating the construction of sewer lines within the Warwick Neck - Bayside community of the City of Warwick, Rhode Island (Figure 1). The funding for the Warwick Sewers project includes federal monies. Accordingly, the undertakings are subject to Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, and subject to review by the State Historic Preservation Officer (SHPO). The firm of Gordon R. Archibald, Inc. (GRA) contracted with PAL for a cultural resource management survey to consider potential historic properties within the undertaking's Area of Potential Effect (APE).

PAL completed Phase I(a) Archaeological Assessment survey within the Bayside I, Bayside II, Bayside III, and Longmeadow sewer segments between March 2006 and July 2008. Areas of high and moderate sensitivity to contain archaeological deposits in meaningful contexts were designated and recommended for further Phase I(c) investigation (Figure 2). PAL recommended Phase I(c) archaeological survey to sample areas of assigned sensitivity, refine assigned sensitivity, and determine the presence/absence and range of features and site types that exist within the planned sewer easements.

Synthesis of the results of Phase I(c) survey indicated that a large and potentially significant concentration of Native American cultural materials and features exists in the northern section of Warwick Neck, south of Mill Cove and focused around the Mill Cove Brook (Figure 3). Designated the Mill Cove Site, it contains a wide range of feature and activity areas resulting from Native occupation and habitation between approximately 3,000 and 350 years ago.

Evaluation of features began in May 2008 and was suspended in June 2008 when identification of human remains and high concentrations of features warranted a hiatus of fieldwork and consultation between the EPA, Narragansett Indian Tribe, and WSA (PAL 2009).

Consultation continued from 2010 to the present and has resulted in consensus that the Mill Cove Site meets National Register of Historic Places criteria. There is also consensus that coordinated

archaeological investigations, specifically along the length of Tidewater Drive, should be undertaken as the first step in determining the types of features that exist there. Tidewater Drive is considered a critical link in the planned sewer line for the Bayside Segment of the Project in that the main line that services this portion of Warwick Neck will need to be constructed beneath the length of that roadway.

This proposal includes a summary of the archaeological investigations conducted within the Mill Cove Site to date, provides a brief historical and cultural context, and details the proposed methodology that PAL will use in further identification and interpretation of features that exist beneath the approximately 4,250' length of Tidewater Drive, that extends within the projected limits of the Native American Mill Cove Archaeological Site.

Interpretive Context; the Archaeological Record

Archaeological research in Rhode Island has demonstrated that distinctive patterns of Native American land use correlate with temporal periods, contrasting topographic relief, drainage characteristics; and soil types (Rhode Island Historic Preservation Commission [RIHPC] 1986). In general, Native populations were concentrated in zones of greatest resource potential for game, fish and shellfish, and eventually horticulture. The coastal/estuarine margins were most productive in this regard. The corridor of wetlands in the near-interior mainland Rhode Island represents an ecologically diverse environ that was periodically targeted and exploited as early as the PaleoIndian Period. Exploitation of this region became intense about 4,200 years ago by the manufacturers of Small Stemmed tradition projectile points (Waller and Leveillee 2002a, 2002b). Following 3,000 years ago, people adapted to a coastal or estuarine-focused system that included larger settlements of extended or continuous duration and increased reliance on marine resources (Leveillee and Harrison 1996; Waller 2000; Leveillee et al. 2006).

Archaeological evidence indicates Rhode Island's postglacial landscape was occupied relatively infrequently between 12,500 and 5000 years before present (B.P.). PaleoIndians hunted large migratory game such as caribou (Meltzer and Smith 1986; Spiess et al. 1998) and opportunistically exploited readily available plant and animal species. PaleoIndian artifacts from southern Rhode Island are limited to isolated fluted projectile points from Barrington (Rhode Island Historical Society 1936), Lincoln (Fowler 1952), North Kingstown (Leveillee and Van Couyghen 1990), Westerly (Turnbaugh 1980), and from the Great Swamp Management Area of South Kingstown (George et al. 1993). Recent reevaluation of the Haffenreffer Museum collections has resulted in the identification of several previously unreported fluted point findspots within the Narragansett Bay drainage (Smith et al. N.D.) Available data suggest that PaleoIndian settlement and/or exploitation was focused along postglacial wetlands, glacial lakes, and riverine settings.

Early Archaic (10,000–7500 B.P) sites in the region are similarly scarce, consisting of low-density recoveries of diagnostic bifurcate-based projectiles from the west bay area at the multi-component Sweet Meadow Brook Site (Fowler 1956) and off Cedar Tree Point (Leveillee 2005). The low frequency of Early Archaic finds is suggestive of brief occupations by highly mobile peoples (Waller and Leveillee 2002b). The proximity of Early Archaic sites to wetland locations implies that regionally, wetland resources became increasingly important during the Early Archaic Period (Nicholas 1987).

Documented Middle Archaic sites (7500–5000 B.P.) are more numerous relative to earlier sites or components. An increase in the frequency and visibility of occupation in the region dating to the period (as reflected in diagnostic point finds, often on multi-component sites dominated by later occupations) suggests that peoples were established in, and had a comprehensive knowledge of resources within southern New England by 7500 B.P. Regionally, non-local and extra-regional lithic materials, which include quartzite and varieties of rhyolite, dominate Middle Archaic assemblages. The correlation of regional lithic material types and Middle Archaic site distributions led Dincauze (1976) to conclude that Native American band or tribal territories had been established within major river drainages across the region by this time. The location of many of Rhode Island’s documented Middle Archaic sites demonstrates a strong focus within the region’s interior wetland environs with a settlement system that involved large base camps supplemented by smaller limited duration logistical camps and exploitation sites occupied by few individuals (Waller and Leveillee 2002b).

Late Archaic Period (5000–3000 B.P.) archaeological sites are well-represented in Rhode Island, and by their numbers indicate substantial (and likely permanent) populations of Native Americans in the area after 5,000 years ago. Three distinct cultural traditions, Laurentian, Small Stemmed, and the Susquehanna, are identifiable in the regional archaeological record between 5000 and 3000 radiocarbon years B.P. The density of Late Archaic sites suggests increased Native American residency for the period (Dincauze 1975). The Laurentian tradition is the earliest cultural expression of the Late Archaic in Rhode Island. Laurentian tradition site distributions suggest an interior upland settlement focus associated with a hunter-gatherer subsistence economy. The database of Late Archaic Small Stemmed tradition archaeological sites in Rhode Island is extensive, consisting of thousands of Small Stemmed projectiles from combined local assemblages. The Small Stemmed settlement system included large base camps concentrated along the well-drained, resource-rich banks of interior streams, ponds, and wetlands, supplemented by task-oriented, short-duration sites that targeted specific resources (Waller and Leveillee 2002b). The “cognitive landscapes” of these peoples were focused upon riverine environments, with limited exploitation of marine resources.

The Transitional Archaic Period (3600–2500 B.P.) bridges the Archaic and Woodland periods and is diagnosed in southern New England by Susquehanna tradition cultural materials and sites. Radiometric and stratigraphic information collected from archaeological sites in southern New England indicate the Susquehanna tradition was temporally contemporaneous with Late Archaic Small Stemmed projectile points (Filios 1989). The Transitional Archaic settlement pattern reflects a shift to include coastal or riverine settings with a subsistence base focused on the acquisition of riverine or estuarine flora and fauna that included fish, nuts, and small- to medium-sized mammals (Pagoulatos 1988).

The Woodland Period (3000–450 B.P.) was a time of dynamic development for southern New England’s indigenous peoples, marked by a transition from mobile hunting and collecting to sedentary horticultural settlements. Early Woodland (3000–1600 B.P.) settlement patterns were characterized by limited use of upland areas and more intensive use of coastal and estuarine resources. Coastal habitation sites and shell midden deposits from along the saltwater and estuarine margins of Maine to New York reflect increasing dependence on shellfish and other marine resources through the Early Woodland Period. Interior site locations that contain artifacts diagnostic of the Early Woodland Period are fewer than preceding periods.

Middle Woodland (1650–1000 B.P.) site distributions indicate a continued focus on coastal and riverine ecosystems. Interior Middle Woodland sites in particular are focused along major river bends and confluences. Small hunting camps were contrasted with larger residential habitations, and small “nodal” sites that specialized in the circulation of cultural materials through a formalized trade network may have been part of the regional Middle Woodland settlement system (Hecker 1995). The earliest evidence of domesticated cultigens in the region dates to around A.D. 1000, coincident with the end of the period (Bendremer and Dewar 1994; Leveillee and Harrison 1996; Leveillee et al. 2006). Traditionally the introduction, adoption, and subsequent intensification of horticulture in the Northeast has been described as a substantial alteration of previously established settlement and subsistence patterns of Archaic Period hunters and gatherers (Snow 1980).

The Late Woodland Period (1000–450 B.P.) is associated with an improvement in ceramic technology and production. The distribution of Late Woodland Period sites reflects a continuation of the Middle Woodland pattern. Sites are common within coastal environments, around interior freshwater ponds and wetlands, and adjacent to large tributary streams and rivers. Late Woodland site types included specialized exploitation areas (shell middens, hunting and processing camps, lithic workshops, etc.), small domestic sites, and larger dispersed villages (Leveillee et al. 2006). By the Late Woodland Period, maize horticulture gained increasing importance. Reduction in communal mobility influenced the development of Late Woodland territories and social structure. Social complexity, the formation of political alliances, and firm establishment of tribal territories (that may have had their beginnings as early as the Middle Archaic) appear to have solidified during the Late Woodland (Mulholland 1988). Midwestern trade in cultural items continued into the Late Woodland. However, the importance of the Late Woodland’s Midwestern trade had certainly diminished as compared with that of the preceding Middle Woodland Period.

The Narragansett Indians occupied the area, in large numbers, at the time of European-Native contact. Archaeological research within western Narragansett Bay and its periphery indicates both short and long-term logistical campsite occupations as well as more substantial domestic habitations and concentrated settlements along the near-interior and coast, with significant population densities after about 3,000 years ago. Sites include evidence of domestic activities, processing and storage areas, individual and collective burial locations, and lithic processing workshops. Surface finds at numerous locations along the coast and near-interior bodies of water indicate intensity of site densities within Narragansett territory along the western section of the bay. Fishing supplemented hunting, collecting, and planting with particular concentrations at the falls during spring fish runs. Inland and coastal ponds were fished in the winter, while shellfish beds in sheltered coves could be exploited year-round.

State site files at the RIHPHC indicate numerous sites, dating from all temporal periods clustered around the wetlands, ponds, and water courses, especially in the uplands and near-interior. Scores of sites are known around steatite source areas, rockshelters, and campsites along interior and near-interior feeder streams, and the importance of the falls is documented in historic record and Narragansett oral tradition.

Pre-contact Native American archaeological sites dating from the Middle Archaic through the Woodland Period are known in high density within today’s Warwick, and on Warwick Neck. Documented sites include short-duration occupations of expeditious stone tool maintenance, hunting forays, and resource collection. Known sites include rockshelters (Rocky Point), shell

middens, and campsites. Thirteen instances of isolated and clustered burials are also known to surround Greenwich Bay.

The first Europeans arrived in the western bay area between 1638 and 1640. They encountered four major subdivisions of the residing Narragansett tribe: Shawmets, Potowomuts, Cowesetts, and Pawtuxets (named for little falls); each led by a sub-sachem of the Narragansett. Pomham ruled the Shawmets, Taccoman ruled the Cowesetts and Potowomuts, and Saconoco presided over the Pawtuxets.

Native American settlement at the time of European contact focused upon near-coastal and coastal confluences of rivers and streams. Relatively large concentrations of dwellings were surrounded by a network of fields and collecting territories. The importance of waterways in Native landscape perspectives is reflected in their use as territorial and boundary markers as lands were transferred from Native to European possession. Roger Williams acquired the land that comprises today's Providence, south to the Pawtuxet River in 1638. Later in 1638, Saconoco transferred the Pawtuxet Purchase land to William Arnold, William Harris, William Carpenter, and Zachariah Rhodes.

Warwick Neck is included in the original Shawomet Purchase lands, executed in January 1642 (1643?) between Samuel Gorton and 11 followers and the Narragansett Indian sachem Miantonomi, with the sub-sachem Pomham witnessing the deed. Shortly after the Shawomet Purchase, William Arnold and other Pawtuxet settlers attempted to drive Gorton and his followers from the area, and convinced Pomham to place his lands under the jurisdiction of the Massachusetts Colony. Massachusetts sent troops to seize the cattle of the Gortonists, arrested Gorton and six followers, and took them to Boston for trial on counts of heresy and sedition. After being put in irons and forced to work in various towns throughout the colony for a winter Gorton and his followers were set free, but were banished from all territory under the jurisdiction of the Massachusetts and Plymouth Colonies. Gorton lived briefly on Aquidneck Island, and in 1644–1645 sailed to England to petition Parliament to secure his Shawomet lands. In 1646 Massachusetts was ordered by Parliament to reinstate the Shawomet purchasers their lands and was barred from further attempts to exercise jurisdiction over them. In gratitude Gorton changed the name of the settlement to Warwick, commemorating the supportive Earl of Warwick.

During the time that Gorton was being held prisoner in Massachusetts, the Narragansett Sachem Miantonomi was murdered by rival Mohegans, possibly with the support of Massachusetts Colony political factions.

When the Narragansetts saw that Gorton was freed by Massachusetts they believed he had powerful allies in England and placed themselves under the “protection of the English,” seeking relief against Massachusetts Colony. Pomham however, remained allied with Massachusetts and refused to leave his Shawomet territory, encompassing Warwick Neck. He asked Massachusetts for assistance against the Gortonists and protection from the Narragansett Indians. Massachusetts Colony sent 11 men to help Pomham erect a fort. Today's Paine Street and Fort Street intersection is the reputed site of the fortification, known historically as Pomham's Fort.

In 1665, after constant conflicts between the Shawomets and the Gortonists, the King's Commissioners ordered that Pomham and his people remove themselves. They remained however until more widespread hostilities broke out during King Philip's War (1675–1676).

In July 1676, a force of approximately 80 Narragansetts who had joined King Philip's struggle against the English were camped on Warwick Neck awaiting coordination for an attack on Newport. A force of 300 Colonial soldiers and Indian auxiliaries marched under the leadership of John Talcott and killed or captured 67 of the Narragansetts. By August of 1676, Philip had been killed and the Native attempts to regain their former holdings had ceased. In the spring of 1677, Gorton and his followers returned to Warwick Neck. After the conflict, the area's Native Americans became increasingly marginalized as English settlement expanded virtually unchallenged in the wake of the Native's loss of legal and social status.

Phase I(c) Investigations

PAL conducted the Phase I(c) surveys in 2007 and 2008. Because the sewer lines will be constructed beneath existing roadways, the survey methodology has relied primarily upon monitored excavations with a flat-bladed backhoe. The methodology employed for the Phase I(c) surveys of the Bayside I, Bayside II, Bayside III, Longmeadow (and supplemental work along Tidewater Drive) sewer segments included selection of representative areas previously assessed as archaeologically sensitive for machine trenching. Within those areas assessed as sensitive, streets were marked with paint to indicate where machine trenching was planned. Following coordination with Digsafe and the Warwick Water Department, the asphalt was saw cut and removed. A flat-bladed backhoe was utilized to remove the roadbed and any fill layers to a depth where original soils were observed.

Artifact concentrations or features resulting from cultural activity were documented (mapped and photographed) but no further excavations were completed, pending communication and consultation with the Narragansett Indian Tribal Historic Preservation Office (NITHPO), WSA, and Environmental Protection Agency (EPA). Once features and material concentrations were noted, they were covered with plastic, trenches were back-filled, and the asphalt street surface was restored. Summary reports detailing the methodology, results, and recommendations for further considerations have been completed for each segment (Bayside I, Bayside II, Bayside III, Longmeadow, and Tidewater Drive).

Evaluation Phase Machine Trenching

The methodology for exposing features and material concentrations during the initial phase of the evaluation study was consistent with that employed during the earlier Phase I(c) fieldwork. The roadbed was marked with paint, saw cut, and removed along the construction easement as indicated on project plans. A flat-bladed backhoe was used to systematically remove the roadbed and any fill strata to the fill/subsoil interface. Exposed surfaces were cleaned by hand with shovel and trowel to determine if features were present. Any features identified through this process were documented (mapped and photographed) but no further excavations were completed, pending ongoing communication and consultation with the NITHPO, WSA, and EPA. Once features and material concentrations were noted, they were covered with plastic, trenches were back-filled, and the asphalt street surface was restored.

Figure 3 illustrates segments of sewer construction easements along roadways within the Mill Cove Site (Bayside I Sewer Segment) subject to machine-assisted removal of road surfaces, and

excavation to below the roadbed/soil interface to expose and document archaeological materials and/or features. Each area is described in more detail below:

River Vue Avenue

Machine Trench 1 was dug along River Vue Avenue. The trench extended along the roadway beginning in front of house number 110 (M.H. 4+50) and extended along the sewer easement east, terminating in front of house number 23 (M.H. 5+00). Six archaeological features were exposed in Trench 1. Additionally, several small concentrations of charcoal fragments, and two probable post molds were noted. These features include small (less than 50 cm diameter), medium (between 50 and 100 cm diameter), and large (greater than 1 m diameter) pits and material deposits readily observable within intact subsoil matrices. The pits are remnant truncated soil deposits colored by charcoal fragments and decomposed organics. Fragments of quartz chipping debris were in association with Feature 4. Digital images of representative examples of the Machine Trench 1 features are illustrated in Figure 5.

Feature 6 in Trench 1 is a concentration of fragmented mammal long bone. The soil matrix around the bone fragments appeared to be undisturbed subsoil with no evidence for an associated feature noted. No artifacts or other material culture were noted in immediate proximity to the bone fragments.

Posner Avenue

Trench 2 of the 2008 evaluation within the Mill Cove Site was dug along a section of Posner Avenue. It extended from house number 11 south to a point approximately 20 feet (ft) north of the intersection of Posner and Riverview Avenue. The trench was dug along the sewer construction easement as marked on project plans. Features exposed in Trench 2 included several identified during previous (Phase I[c]) study (MT-5, 2007) and an additional six in newly exposed soils (Figure 6). These features include post molds marking locations where stakes or structural supports once stood, and medium-sized (50 to 100 centimeters [cm] in diameter) soil stains containing charcoal fragments. Some contain shell, lithic chipping debris, aboriginal ceramic sherds, and/or rocks fractured by association with fire (Appendix A). Digital images of representative examples of the Machine Trench 2 features are illustrated in Figure 7.

Mill Cove Road

Trenches 3 and 4 of the 2008 evaluation fieldwork on the Mill Cove Site were dug along Mill Cove Road. Trench 3 extended from a point just east of the Mill Cove Stream and Mill Cove Road crossing to a point approximately 20 ft west of the intersection of Wentworth Avenue, on Mill Cove Road. The trench was dug along the sewer construction easement as marked on project plans. Seven features were exposed during the excavation of Trench 3. These features included small (1 to 50 cm) and medium-sized (50 to 100 cm) generally circular truncated pits, one large (greater than 1 m diameter) pit feature, and two apparently isolated post molds (features 5 and 6) (Figure 8) (Appendix A). Digital images of representative examples of the Machine Trench 3 features are illustrated in Figure 9.

Machine Trench 4 was dug over the course of several days in two segments; the first was dug from east to west, beginning in front of house number 147 extending to the front of house number 157. The second segment was dug west to east, beginning in front of house number 176 extending to,

and intersecting into, the remnant western limit of the initial trench in front of house number 157. Trench 4 was segmented into a western half and an eastern half. In order to facilitate documentation and avoid overlapping of assigned feature number designations, features in the eastern segment were numbered sequentially from 1 to 22 as they were encountered, and features in the western segment were given letter designations A through Z, and then double letters (AA, AB, AC, AD, and so on) resulting in features indicated as A through AN. As a result of this labeling, two features in the zones where the trenches intersected have double designations; Feature 22 /AF and Feature 21/AE (Figure 10).

Figure 10 illustrates the complexity and clustering of the many (50+) features identified within Machine Trench 4 along Mill Cove Road. They include a high density and wide range of sizes and types, collectively characteristic of a “living surface” resulting from a mosaic of site occupation and use (Appendix A). Clustered post molds are suggestive of structures and food processing. The size and composition of features in plan reflect food processing activity (cooking, storage, refuse disposal) and the variety of feature forms collectively indicate that this area was one of domestic space. Digital images of representative examples of the Machine Trench 4 features are illustrated in Figure 11.

Lippitt Avenue

Machine Trench 5 of the 2008 evaluation study of the Mill Cove Site was dug on Lippitt Avenue. It was excavated west to east in two segments, facilitating the crossing of a zone dominated by wetland soils. Excavation along the sewer construction easement began in front of house number 148 and extended east for approximately 60 ft (where fills and wetland soils were encountered). The second segment of Trench 5 excavation resumed in front of house number 128 and extended east, terminating at a point along the easement parallel to the midpoint between house numbers 122 and 118.

Three features were exposed in the western segment of Trench 5. Twenty three (23) features were exposed in the eastern segment of Trench 5 (Figure 12) (Appendix A). The features in Trench 5 along Lippitt Avenue are densely concentrated and reflect an intensity of occupation and use of this area for multiple purposes. Grouped post molds are among the Lippitt Avenue feature inventory and numerous features of various (small, medium, and large) size ranges contain aboriginal ceramics, shell, lithic debitage, and animal bone.

Two features in Trench 5 on Lippitt Avenue (#1 and #15) are of particular concern as they are concentrations of bone consistent with human cranial fragments. PAL made a tentative determination in the field that they are human, are contemporaneous with other spatially-related archaeological features, and will require verification and appropriate follow through. After they were photographed, they were immediately covered. These features likely reflect burial practice and/or ceremonial aspects of the associated culture(s). The cultural, legal, and historical implications of any suspected burials should be subjects of the ongoing discussions between the EPA, NITHPO, SHPO, and WSA. Digital images of representative examples of the Machine Trench 5 features are illustrated in Figure 13.

Whipple Avenue

Machine Trench 6 and Machine Trench 7 of the 2008 evaluation study of the Mill Cove Site were excavated along two sections of Whipple Avenue. Machine Trench 6 was dug along the sewer

easement in front of, and extending along the length of the lot of house # 123. The length of Trench 6 proved to be entirely disturbed by previous street and utility work. There were no cultural features or archaeological materials noted within Trench 6 on Whipple Avenue.

Trench 7 was also excavated along a section of Whipple Avenue, west of the Trench 6 location. Trench 7 was excavated west to east, beginning at a point 25 ft east of the Tidewater Drive and Whipple Avenue intersection, heading east along the Whipple Avenue sewer construction easement and terminating at the planned manhole at station 6+45, in front of house number 143. In contrast to Trench 6, Trench 7 along Whipple Avenue contained intact subsoils and evidence of multiple cultural features. The north side of the machine trench displayed disturbance associated with utility installations, but the south remained sufficiently intact to contain features in meaningful contexts.

Figure 14 illustrates the locations of 49 features noted within Trench 7. These features vary widely from small post mold impressions to large (exceeding 1 m diameter) pit features. There were areas within the trench where features were so densely clustered as to be described as a “living surface.” Feature 5 was singularly noteworthy as a relatively recent post-contact period deposit; all other Whipple Avenue Trench 7 features are believed to be affiliated with pre-contact occupation and or habitation. Noted cultural materials and feature-associated deposits included burnt rock, shell and bone fragments, stone tool fragments (bifaces and projectile points) and chipping debris (Appendix A). Digital images of representative examples of the Whipple Avenue Machine Trench 7 features are illustrated in Figure 15.

Tidewater Drive, Longmeadow Avenue and Ocean Avenue

Initial I(c) survey within the Bayside II and Longmeadow sewer segments, and subsequent machine trenching along Tidewater Drive, have also contributed to the Mill Cove Site feature inventory. Intact soils characterized Machine Trench 2, dug along Longmeadow Avenue during Phase I(c) testing. One 35 cm round feature was found 7 m from the west end of the trench, and an additional 7 features and 12 post holes were located in the eastern half of the trench.

Machine Trench 3 was excavated along Ocean Avenue during previous Phase I(c) study. This trench was extremely rocky at the north end of the trench. In the southern extent of the trench, bone fragments were discovered at a depth of 30 to 40 cm below surface (cmbs), immediately below the roadbed. The deposits surrounding the bone appeared to have been truncated and compressed by the construction of the road and the noted bone is fragmented into small pieces. This deposit is a very strong candidate for a burial feature. It was immediately covered with plastic and then resurfaced with gravel pending further considerations by WSA, PAL, RIHPHC, and the NITHPO. Quartz and Attleboro red chipping debris and some shell were also observed in this feature. Designated Machine Trench 3, Feature 1, this feature is of serious concern as a ceremonial deposit.

Machine-assisted Phase I(c) survey along Tidewater Drive resulted in the identification of archaeological deposits that reflect Native American occupation and activity within the project area. Specifically, features have been documented in Machine Trench 3, 4, and 7. These features confirm that elements of the Mill Cove Archeological Site extend into the planned sewer construction easement(s) along Tidewater Drive.

Preliminary Interpretations

Results of investigations to date indicate that the Mill Cove Site is a result of long-term and intensive Native American occupation of the Warwick Neck section of the city of Warwick.

Prior to the 17th century, western Narragansett Bay had been occupied by Native peoples for thousands of years. By purchase, the Shawomet lands of Narragansett sub-sachem Pomham came into English hands in 1642. In 1665, after constant conflicts between the Shawomets and the Gortonists, the King's Commissioners ordered that Pomham and his people remove themselves. They remained however until more widespread hostilities broke out during the King Philip's War (1675-76).

Following the December 1675 attack and massacre at the Narragansett fortifications in the Great Swamp, the Narragansett joined the Wampanoag against the English. The hostilities associated with King Philip's War resulted in the burning of nearly 100 wigwams of the Shawomets on Warwick Neck in December 1675 by a force of combined colonial troops. A force of approximately 80 Narragansett was camped on Warwick Neck in July 1676, awaiting coordination for an attack on Newport. Three hundred Colonial soldiers and Indian auxiliaries under the leadership of John Talcott marched on Warwick Neck and killed or captured 67 of the encamped Narragansett.

The Mill Cove Site is significant and by consensus opinion (EPA, SHPO) is eligible for listing on the National Register of Historic Places. It includes multiple features reflecting domestic spaces, semi-permanent or long-term occupation and ceremony, including suspected burials (3). A working hypothesis includes that the Mill Cove Site reflects the remnants of Pomham's 17th century Shawomet Village, a documented location of armed conflict during King Philip's War.

As noted above, there is consensus that the Mill Cove Site meets National Register of Historic Places criteria. There is also consensus that coordinated archaeological investigations, specifically along the length of Tidewater Drive, should be undertaken as the first step in determining the types of features that exist there. Tidewater Drive is considered a critical link in the planned sewer line for the Bayside Segment of the Project in that the main line that services this portion of Warwick Neck will need to be constructed beneath the roadway.

Proposed Machine-Assisted Feature Identification along Tidewater Drive

The remainder of this document is the recommended plan to further identify and document as yet undiscovered associated with the Native American occupation of the Mill Cove Brook Site that exist beneath the roadway along the 4,250' length of Tidewater Drive. It includes recommendations for further systematic machine trenching and exposure of subsoils to determine the extent to which the site exists and extends along the planned Tidewater Drive construction easement. And details the proposed methodology for exposing and documenting morphology, considerations of their possible function(s), and interpret the site-related activities that resulted in their origins.

Following saw cutting of asphalt and removal of the road and gravel bed, a flat-bladed backhoe will be used to open machine trenches along the approximate 4,250' length of Tidewater Drive to determine the presence/absence of features that exist in meaningful contexts beneath the road. The

immediate areas of intersections of crossroads and streets intersections off Tidewater Drive, however, will remain open to local facilitate traffic. Tidewater Drive runs essentially north-south, down the length of the northern half of Warwick Neck. Engineering plans indicate that water lines have been dug beneath the eastern side of the road. Anticipating a possibility that the planned sewer line might be installed in the previously utilized water line installation easement, PAL will concentrate our machine trenching along the east half of the roadway, allowing vehicular traffic to move along the west side of Tidewater Drive.

In each machine trench, the subsoils will be exposed to determine the presence/absence of features and anomalies. Any exposed features or suspected features will be further investigated by hand to verify if they are cultural. Confirmed features will be documented in plans and digital photography. They will be inventoried by shape, color, size in plan, and content.

Excavations will be coordinated with RIHPHC and NITHPO.

Laboratory Processing and Analyses

All cultural materials and information recovered from the project area during the field investigations will be returned to the PAL facility for laboratory processing and analyses. These activities will include:

- cleaning, identification, and cataloging of any recovered cultural materials;
- analysis of spatial distributions of cultural materials;
- map and graphics production.

Appropriate conservation measures of artifacts will be taken when necessary. These conservation measures will be in accordance with the RIHPHC's *Standards for Storage and Custody of Archaeological Collections* (RIHPHC 2006).

Work Products

A technical report for the Bayside Sewer Segment I will be prepared after laboratory processing and analyses are completed. The report will detail the results and interpretations of the evaluation/mitigation of specific features, as they relate to the significance of the Mill Cove Brook Site, and will conclude with recommended protocols to be followed relative to unanticipated archaeological discoveries during construction.

Project Schedule

PAL will submit this proposal to RIHPHC/SHPO with an archaeological permit application. Upon receipt of the permit, fieldwork will be scheduled to begin within 30 days, following the logistical coordination with municipal agencies, ACOE, and NITHPO. The fieldwork is projected to extend for a period of eight weeks, anticipating that roadway removal, and the subsequent exposure, recording, and mapping of features will progress, on average, at a rate of approximately 100' per

day. A fieldwork summary report with results and interpretations will be submitted within 60 days after the completion of fieldwork.

Project Personnel

The archaeological investigations will be overseen by Alan Leveillee, RPA, principal investigator. The fieldwork will be supervised by a project archaeologist. All PAL project personnel meet the qualifications set by the National Park Service (36 CFR Part 66). Project archaeologists have at least two years of supervisory experience and two years of field experience in New England.

Cost

A cost breakdown is attached separately.

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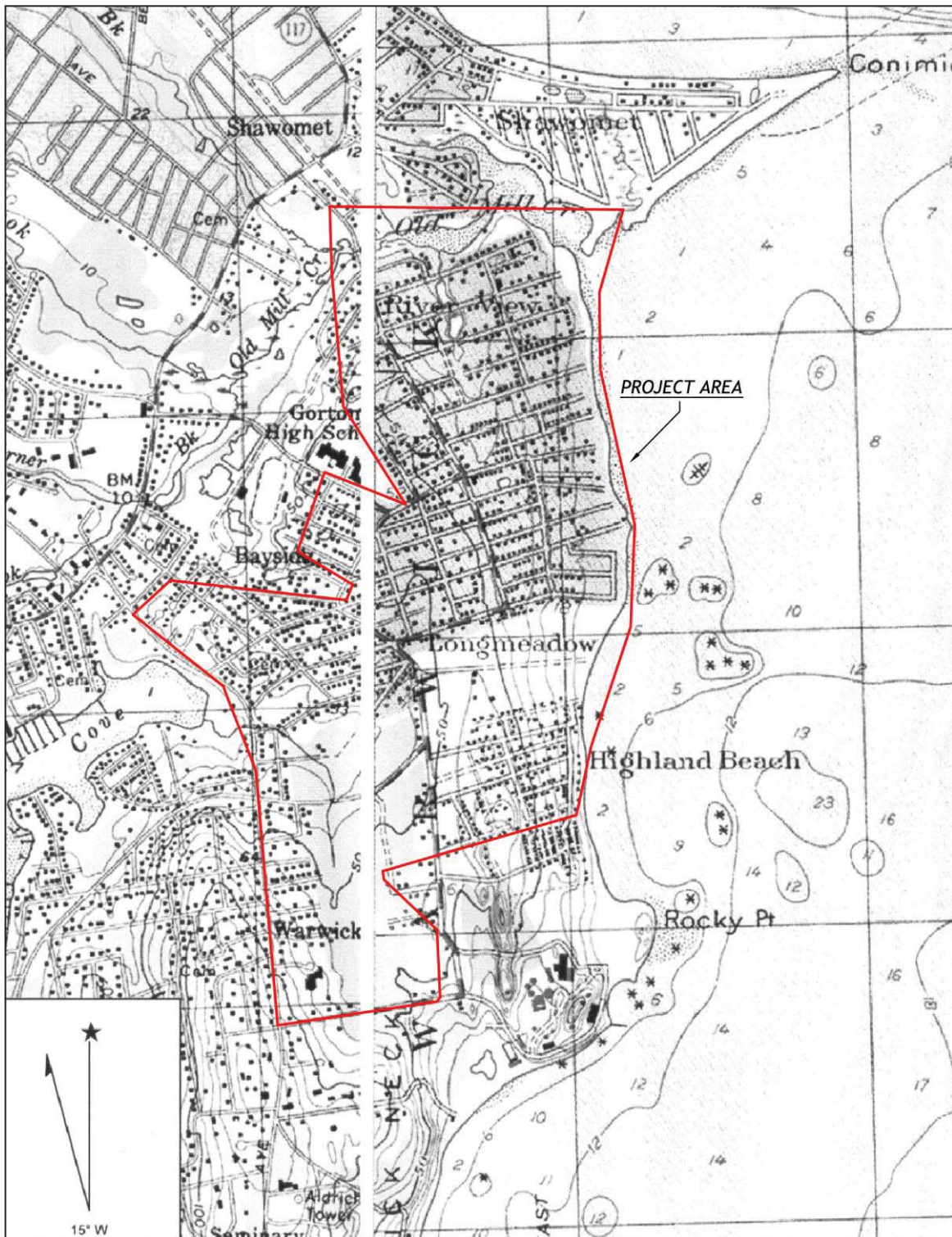


Figure 1. Location of the Bayside Sewers Segment, Warwick, RI.

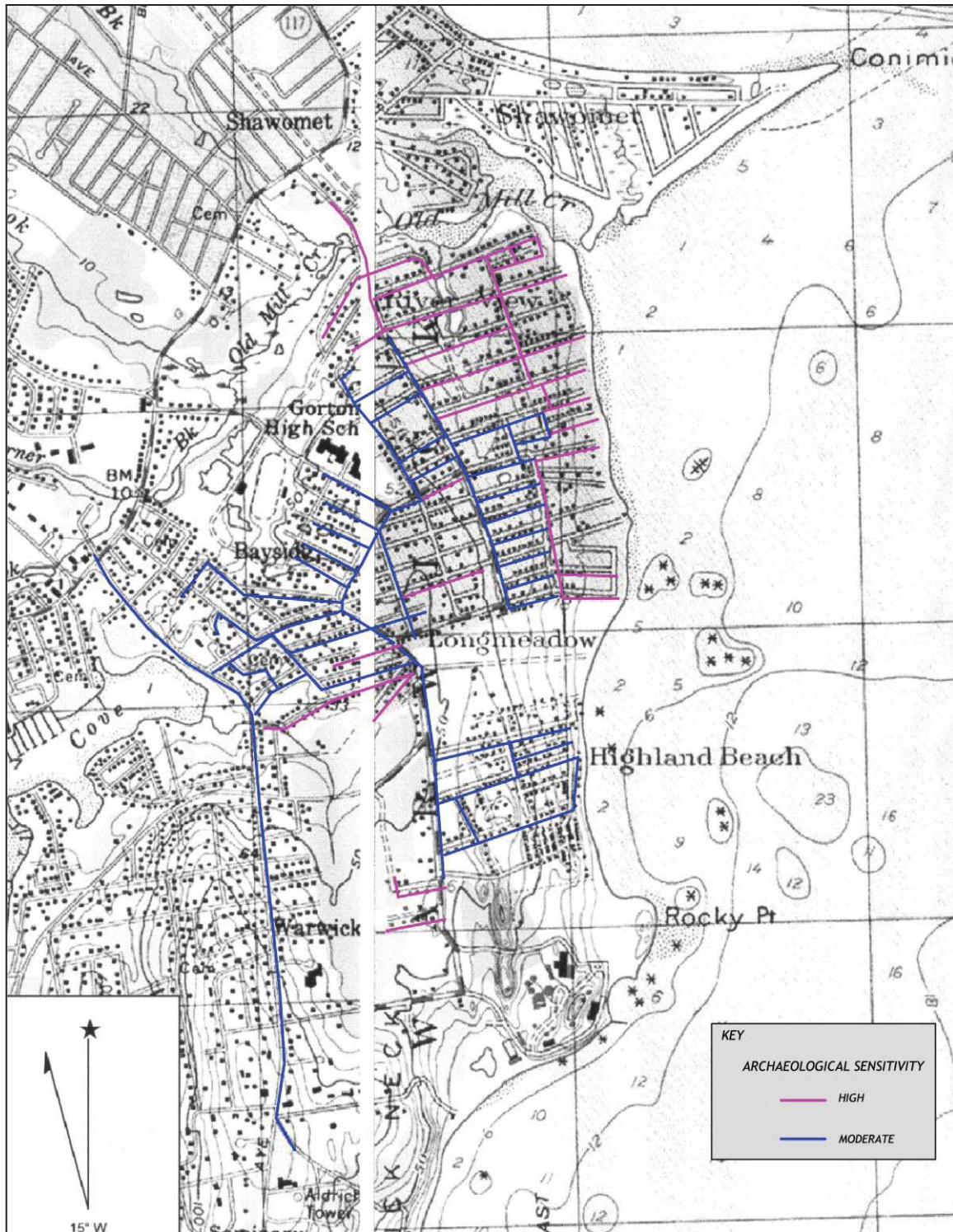


Figure 2. Assessed archaeological sensitivity within the Bayside Sewer Segment.



Figure 3. The Mill Cove Archeological Site- Trenches to date with archaeological features.

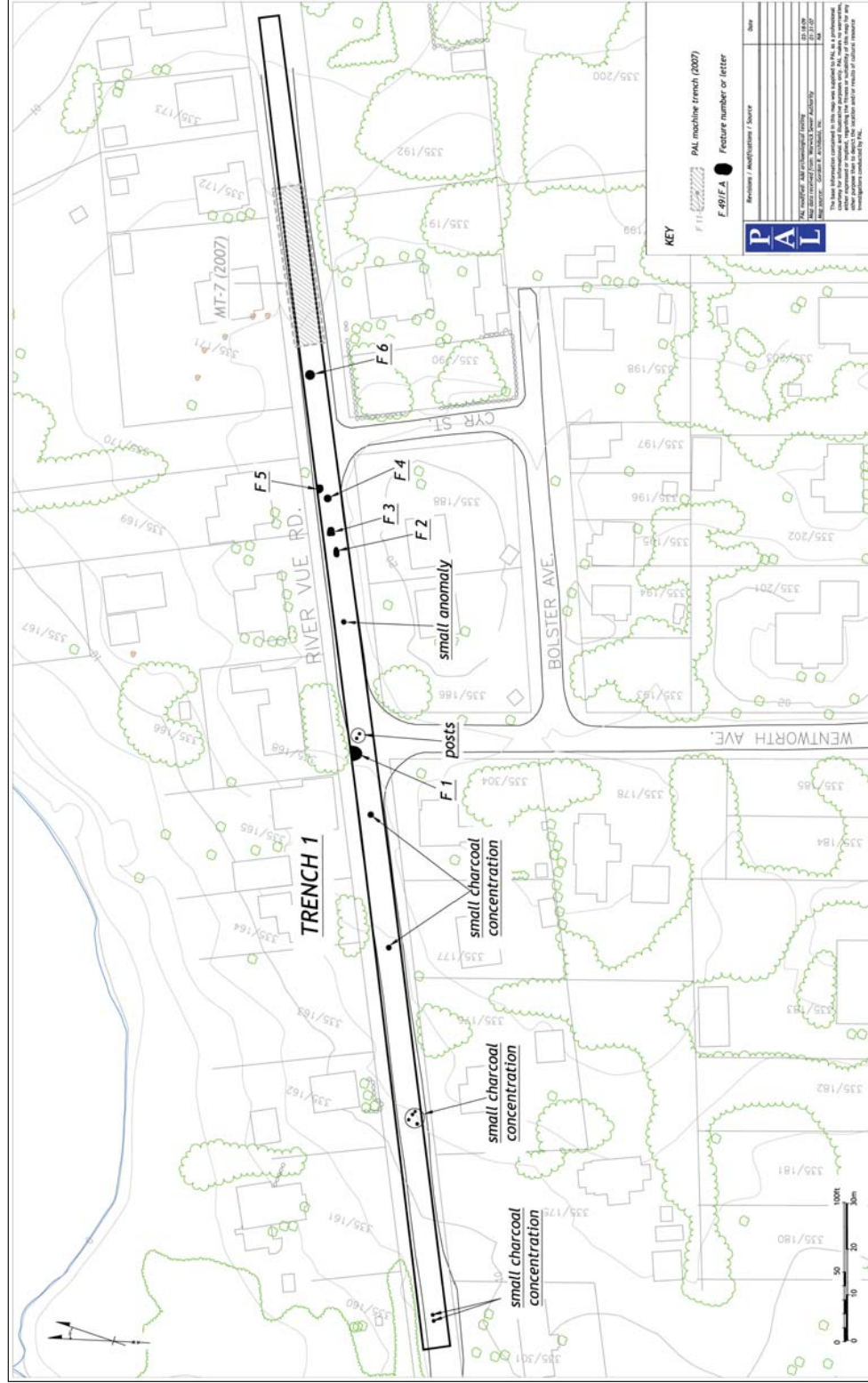


Figure 4. Machine Trench 1 along River Vue Road.



Feature 3



Feature 5



**Feature 6- mammal bone
fragments**

Figure 5. Digital Images of Features in Machine Trench 1, River Vue Avenue.

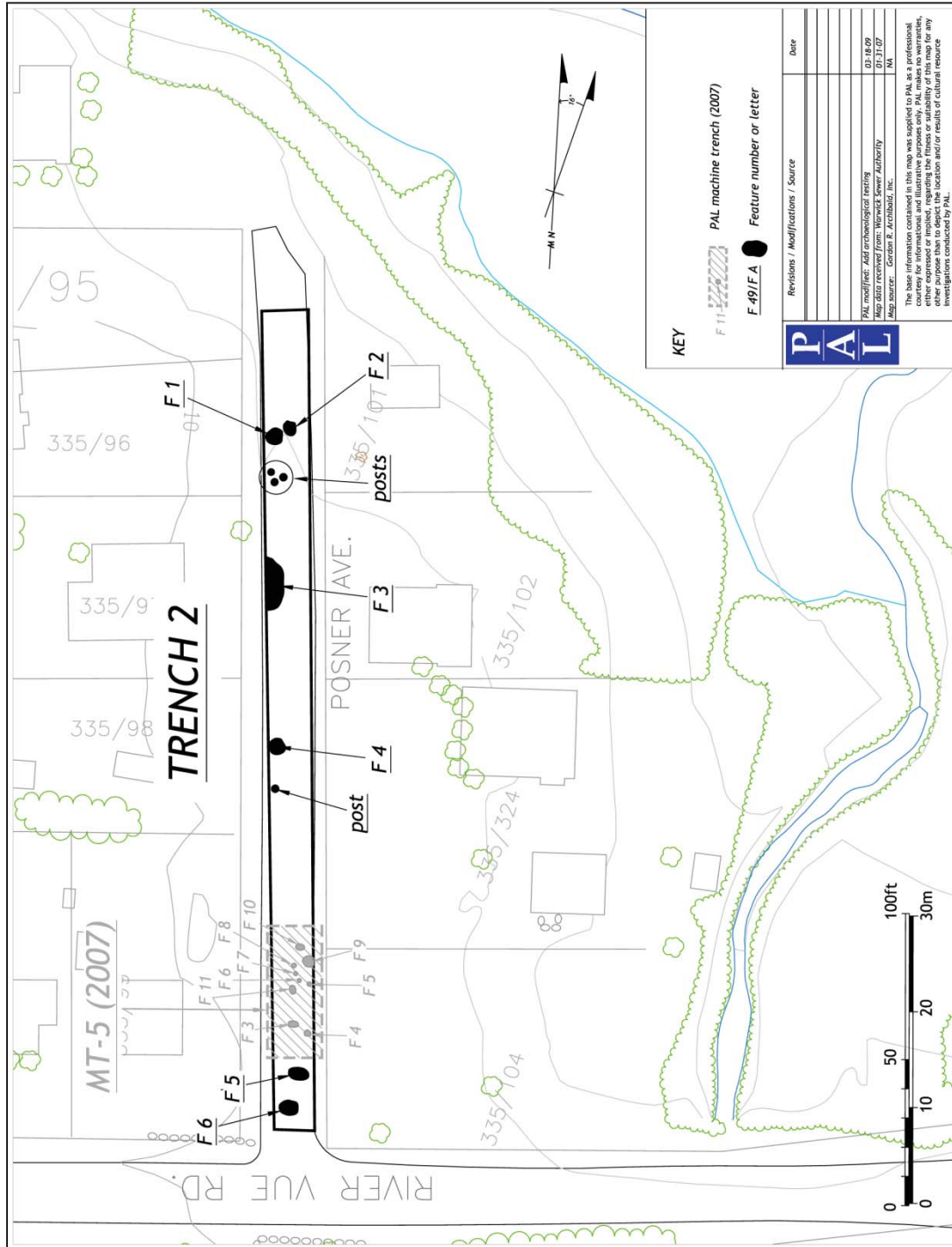


Figure 6. Machine Trench 2 on Posner Avenue.



Features 1 & 2



Feature 4

Figure 7. Digital Images of Features in Machine Trench 2, Posner Avenue.

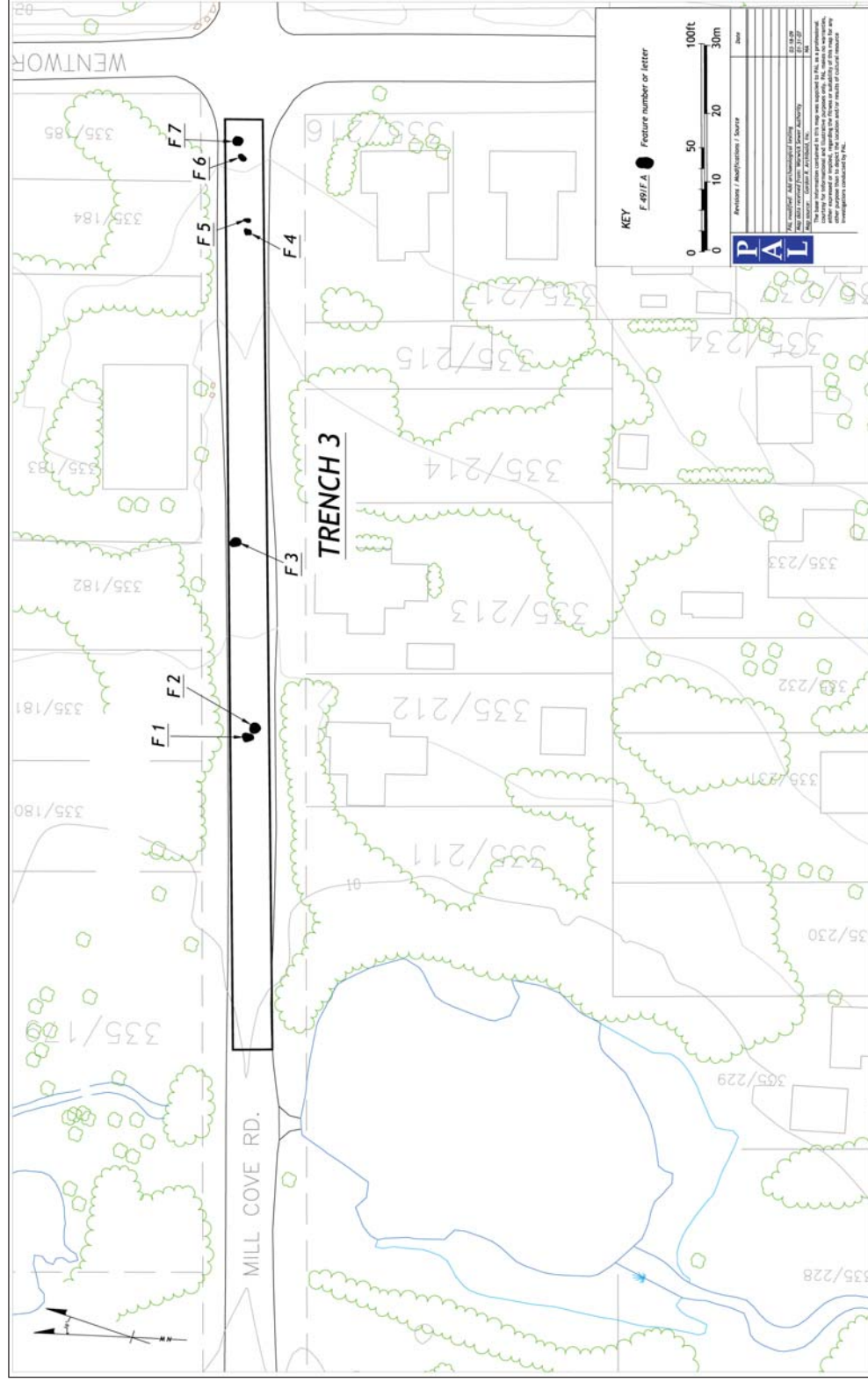


Figure 8. Machine Trench 3 on Mill Cove Road,



Features 1& 2



Feature 3



Features 4 - 7

Figure 9. Digital Images of Features in Trench #3, Mill Cove Road.

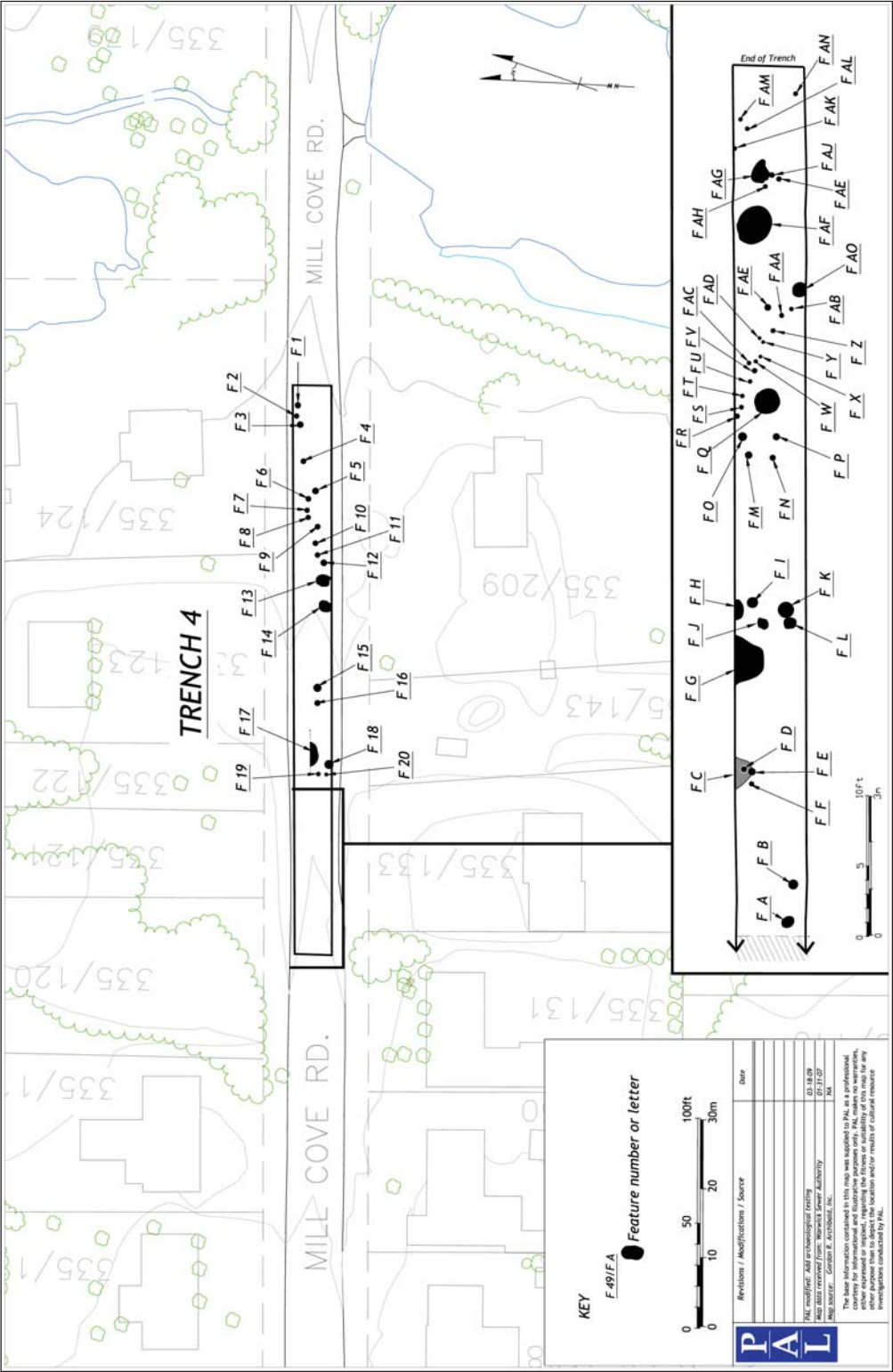


Figure 10. Machine Trench 4 on Mill Cove Road.



Features 5 and 6

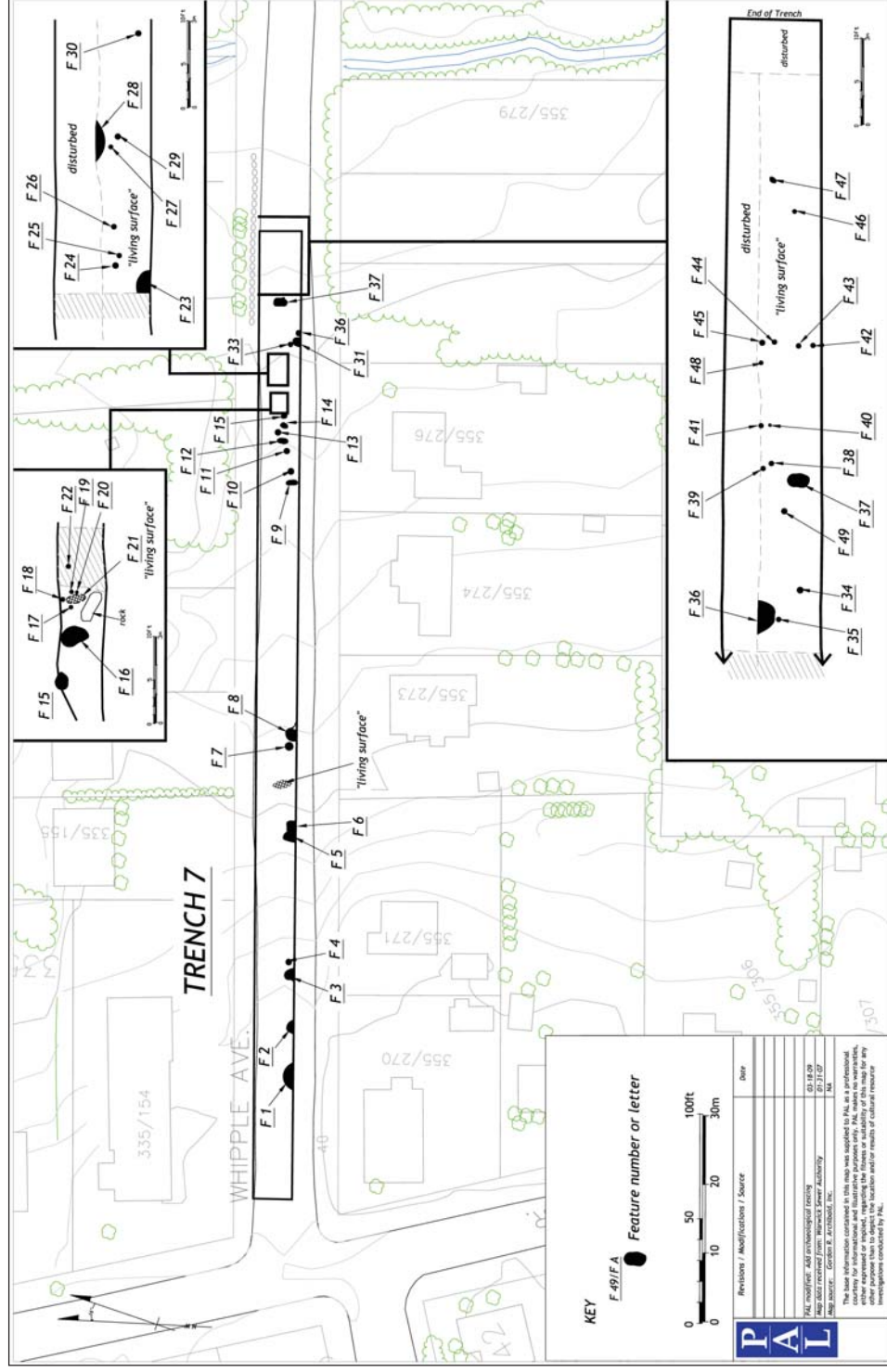
**Area surrounding Features
12, 13, & 14**

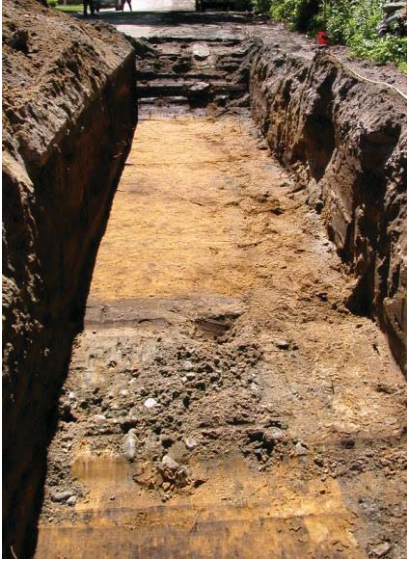


**Feature 22 and surrounding post
molds**

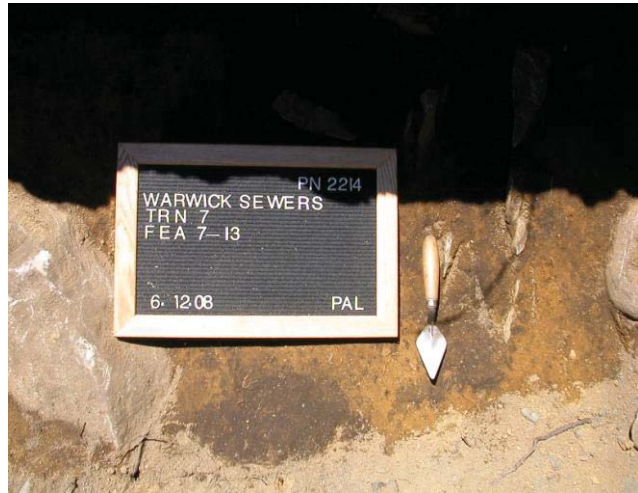
Figure 11. Digital Images of Features in Machine Trench 4, Mill Cove Road.







Feature 5 Historic trash deposit



Features 7 thru 13 area



Feature cluster in central trench section

Figure 15. Digital Images of Features in Trench 7, Whipple Avenue.

Appendix A.

Feature Description Tables by Trench, Mill Cove Archaeological Site, Warwick, RI.

Trench 1. River Vue Avenue

Feature #	Data	Comment
1	65-x-135 cm	Charcoal- north wall of unit
2	25-x-90 cm	In front of house # 50
3	65-x-85 cm	In center of trench
4	80-x-180 cm	
5	60-x-110 cm	Parallel to house 350 driveway
6	Bone in B ₁ matrix	Fragments of mammal bone - long bone

Trench 2. Posner Avenue

Feature #	Data	Comment
1	80 cm diameter	Fire-cracked rock; shell fragments; charcoal; depth 80 cm
2	40-x-35 irregular	Soil stain note 4 or 5 small post molds south of Feature 1
3	35-x-85 south wall of trench	Large & subtle - as much as 2 m north-south; feature fill 2.5y matrix 10yr5/6
4	60 cm diameter	Black - Aboriginal Ceramics; charcoal fragments
5	25-x-20 cm	Post mold
6	60-x-25 cm	Shell; quartz chipping debris; aboriginal ceramics

Trench 3. Mill Cove Road (East of Mill Cove Brook)

Feature #	Data	Comment
1	45 cm diameter	Dark brown mottled 40 cmbs
2	31 cm diameter	40 cmbs
3	103-x-163 cm	
4 & 5	40 cm diameter (#4)	#5 is a small post mold in close proximity to feature 4
6	30 cm diameter	Post mold
7	30-x-40 cm	Mottled anomaly

Trench 4. Mill Cove Road (West of Mill Cove Brook)

Feature #	Data	Comment
1	35 cm diameter	Dark brown - shell fragments possible post
2	30-x-60 cm irregular	Shell fragments
3	35 cm diameter	Some shell; 75 cmbs; lots of chipping debris; Levanna point; three associated small post molds
4	30 cm diameter	Post? 55 cmbs
5	35 cm diameter	Post?
6	15 cm diameter	Post
7	45-x-40 cm	Disturbed by plowing
8	Small stain with whelk shell	
9	Small deposit of shell fragments	
10	40-x-80 cm	55 cmbs
11 & 12	“small circular stains”	posts
13	35-x-110 cm	Large circle with quartz chipping debris; 60 cmbs
14	60-x-80 cm	Possibly 3 intersecting features - chert point and aboriginal ceramics
15	85-x-150	Possible 2 features - “living surface”
16	20 cm diameter	post
17	75 cm	Large multi-feature cluster—120-x-220 cm shell and fire-cracked rocks
18	20-x-95	Associated with #s 17, 19 & 20
19 & 20	West of 17 35 cm diameter	Two overlapping features
21	60 cm diameter	Black -----two small posts to immediate SW
22	1.5-x-2m	Large “living surface” many posts-possible structure
AO	50-x-50 cm diameter	
s,t,u,v,w,x,y,z,aa,ab,ac,ad,ae,ai,ah,r	Small- range from 5 to 9cm diameter	Post molds clustered
q	43 cm diameter	Bottom of fire-related pit? 10yr 2/2
n	post	Possibly associated with Q
o	13 cm diameter	post
m	9 cm diameter	post
i	10 cm diameter	post
h	25 cm diameter	Possible post into north wall

Feature #	Data	Comment
k	26 cm diameter	Possible post 10yr3/4
j	11 cm diameter	post
l	20 cm diameter	post
g	1-x-1 m	Extended into North wall described as “living surface”
c	59-x-36 cm	Extended into North wall-
d & e	Inside and associated with Feature c	E intersects with D
b	22 cm diameter	10yr3/6
a	19 cm diameter	In center of Feature C
aj, ak, al, am, an	4 to 7 cm diameter	posts
ao	30 cm diameter	Large post?

Trench 5. Lippitt Avenue

Feature #	Data	Comment
1	25-x-25 cm	65 cmbs; cranial bone fragments- probable human burial in front of house #148
2	30-x-30 cm	Shell and aboriginal ceramic fragments
3	25 cm diameter	Possible post
4	Area of 20+ post holes in a 5-x-3 m area	Ceremonial?
5	75-x-65 cm	Burnt rock feature with many associated post molds
6	50 cm diameter	
7	50 cm diameter	
8	50 cm diameter	
9	25-x-25 cm irregular	
10	65 cm diameter	Round with associated fire-cracked rock
11	30-x-20 cm	
12	30 cm diameter	round
13	30 cm diameter	round
14		Shell fragments
15	80-x-100 cm	Bone fragments including tooth probable human burial
16	110 cm diameter	Quartz biface and aboriginal ceramic fragments
17	40 cm diameter	
18	40-x-60 cm	Shell concentration

Feature #	Data	Comment
19	40 cm diameter	
20	35 cm diameter	Fire-cracked rock
21	106 cm diameter	Round and dark- shekk, quartz cd, fire-cracked rock
22 & 23	150-x-150 cm	Double feature dark feature fill with shell
24	90 cm diameter	Shell, bone fragments, chipping debris
25	40-x-40 cm	Extends into south wall shell and bone fragments
26	80 cm diameter	Into south wall
27	30-x-90 cm	Extends into south wall

Trench 7. Whipple Avenue

Feature #	Data	Comment
1	75 cm diameter (generally oval)	30 cmbs; 10yr3/2; shell fragments
2	Dense area of shell	Too deep to enter trench; 1.5m deep 10yr2/2
3	Large oval area of fragmented shell	1–2 m deep
4	small	Possible post- too deep to go into trench
5	Historic dump/fill	Historic; metal; tin cans; butchered bone; deep
6	Intruded into by 5	10yr2/2 possible living surface just east of this feature
7	5 cm diameter	Small post
8	45 cm diameter irregular and oval	Quartz chipping debris in 10yr3/2 stain
9		Possible truncated pit feature 10yr2/2
10		Possible post or small pit ? projectile point associated
11		Possible post or small pit ?
12		Irregular pit- possible rock lining
13		Truncated pit
14		Oval truncated pit
15		Possible pit
16		Post or small pit feature
17–22 (except 21)		All post molds approx 5 cm diameter.
21		Irregular stain surrounded by 17–22 posts

Feature #	Data	Comment
22		Stain - possible feature
23		Pit 10yr3/2
24–29 (except 28)		Posts 5–7 cm diameter all 10yr2/2
28		Possible truncated pit 10yr3/2
30	7 cm diameter	Post; 10yr 2/2
31	39 cm diameter	Quartz chipping debris; this feature intrudes into 32; mottled 10yr2/2 and 2.5y6/6
32		Post mold cut by feature 31
33–35	5 cm diameter	Posts; 10yr2/2
36		Possible pit or “living surface” 10yr3/2
37	2 m diameter	Oblong stained area with graphite and burnt ashy area
38–49	5 cm diameter	Post holes; 10yr2/2